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(71) Applicant (for all designated States except US): **SKELETON TECHNOLOGIES AG** [CH/CH]; Zugerstrasse 72, CH-6340 Baar (CH).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **SVENDSEN, Lena** [SE/SE]; Zinkens väg 65, S-117 41 Stockholm (SE). **ZHENG, Jie** [SE/SE]; Hagalundsgatan 14, S-169 63 Solna (SE). **MEURLING, Fredrik** [SE/SE]; Wollmaryxkullsgatan 11, S-118 50 Stockholm (SE). **ROSTVALL, Tomas** [—/SE]; Selmedalsringen 8, S-129 36 Hägersten (SE).

(74) Agents: **ALBIHNS STOCKHOLM AB** et al.; P.O. Box 5581, Linnégatan 2, S-114 85 Stockholm (SE).

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(54) Title: A METHOD FOR MANUFACTURING A DIAMOND COMPOSITE

(57) Abstract: The present invention relates to a method for manufacturing a diamond composite, comprising the steps of: a) mixing diamonds with additives, the mixture comprising at least 50 wt% and less than 95 wt% of diamonds and more than 5 wt% additives; b) forming a work piece from the mixture using a pressure of at least 100 Mpa; c) heating the formed work piece to at least 300°C for removing possible water and wholly or partially removing additives; d) heating the work piece and controlling the heating temperature and heating time so that a certain desired amount of graphite is created by graphitization of diamonds, wherein the amount of graphite created by graphitization is 3-50 wt% of the amount of diamond; e) infiltrating silicon or silicon alloy into the work piece, the infiltration of silicon or silicon alloy being performed at a temperature below 1900°C and a pressure less than 50 bars; and f) heating the infiltrated work piece to form silicon carbide, or other carbides, (and silicides), thereby creating a final diamond composite.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C04B35/573 C04B41/50 C04B35/52 C22C26/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C04B C22C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 179 886 B1 (DANCHUKOVA LIJA VLADIMIROVNA ET AL) 30 January 2001 (2001-01-30) cited in the application example 1	1-10
A	WO 00/18702 A (FRENTON LTD ; SCIENT RESEARCH CENTER AMT OF (RU) ; GORDEEV SERGEY K (RU) 6 April 2000 (2000-04-06) cited in the application example 1	1-10
A	US 6 447 852 B1 (DANCHUKOVA LIJA VLADIMIROVNA ET AL) 10 September 2002 (2002-09-10) example 1	1-10
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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Date of the actual completion of the international search

9 August 2004

Date of mailing of the international search report

11. 8. 04

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Sala, P

INTERNATIONAL SEARCH REPORT

International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 453 951 A (OHNO JOHN M) 12 June 1984 (1984-06-12) column 3, line 24 - column 4, line 17; claim 1 -----	1-10

INTERNATIONAL SEARCH REPORT

International application No.
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Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1 - 10

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-10

Method for manufacturing a diamond composite and use of this method for forming a substrate suitable for a diamond film.

2. claim: 11

A diamond composite obtainable by the method according to claim 1 wherein one side of the composite is coated with a thin layer of aluminium nitride.

INTERNATIONAL SEARCH REPORT

International Application No
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